



PATENT
Customer No. 58,982
Attorney Docket No. 08350.3304-04000

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:)	
)	
Thomas J. KELLY et al.)	Group Art Unit: 3661
)	
Application No.: 10/646,685)	Examiner: Broadhead, Brian J.
)	
Filed: August 25, 2003)	
)	
For: SYSTEMS AND METHODS FOR)	Confirmation No.: 9970
PROVIDING PROXY CONTROL)	
FUNCTIONS IN A WORK)	
MACHINE)	

Attention: Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDED APPEAL BRIEF UNDER 37 C.F.R. § 41.37(d)

Appellant files this Amended Appeal Brief in response to the Notification of Non-Compliant Appeal Brief ("Notice") dated November 30, 2007, the period for response to which extends through January 30, 2008 by a Petition for Extension of Time of one (1) month and fee payment filed concurrently herewith.

The Notice alleges that Appellant's brief filed September 4, 2007 is non-compliant because the Summary of Claimed Subject Matter section ("Summary") purportedly does not contain a concise explanation of the subject matter defined in each of the independent claims involved in the appeal. Specifically, with respect to the "means" limitations of claims 10 and 11, the Examiner alleges that the Summary "fails to

set forth the structure, material, or acts described in the specification as corresponding to each claimed function with reference to the specification by page and line number, and to the drawings, if any, by reference characters," according to 37 C.F.R.

§ 41.37(c)(1)(v).

Appellant submits this Amended Appeal Brief under 37 C.F.R. § 41.37(d), which addresses the alleged errors identified in the Notice. In particular, Appellant has inserted into the Summary the page and line numbers of the specification, and/or the reference numbers of relevant Figures, pertaining to "the structure, material, or acts" corresponding to the "means" recited in claims 10 and 11.

The original Appeal Brief was filed along with a check for the fee of \$500.00 required under 37 C.F.R. § 41.20(b)(2), and thus no fee should be due. Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

This Appeal responds to the February 6, 2007 Final Rejection of claims 1-6, 8-25, and 27-38.

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REAL PARTY IN INTEREST

Caterpillar Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are currently no other appeals or interferences, of which Appellant, Appellant's legal representative, or Assignee are aware, that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-6, 8-25, and 27-38 are pending in the application and stand finally rejected and claims 7 and 26 are cancelled. Claims 1-6, 8-25, and 27-38 are involved in this appeal. A copy of these claims is provided in the attached Claims Appendix.

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the final rejection of claims 1-6, 8-25, and 27-38.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed subject matter on appeal relates to systems and methods for providing proxy control functions in a machine. Specification at p. 29, ll. 2-3. A gateway may be provided onboard a machine to replace one or more control modules required in a particular machine environment. Specification at p. 29, ll. 5-7. The gateway may be programmed with proxy logic corresponding to the control modules replaced by the gateway and utilize a mapping structure to recognize addresses of the control modules for which the gateway is acting as proxy. Specification at p. 29, ll. 7-11. A message directed to an address that would otherwise be recognized as associated with one of the particular control modules replaced by the gateway will be intercepted and processed accordingly. Specification at p. 29, ll. 11-14. In this manner, the gateway may act as a virtual control module. Specification at p. 29, l. 15. In another aspect, the gateway may forward or re-route the message to another machine if it is determined that the message is not destined for local processing. Specification at p. 21, ll. 19-22; and Fig. 8, step 830.

In particular, independent claim 1 is directed to a method for providing proxy services in a network of modules included in a machine environment. Specification at p. 29, ll. 2-3. The method is performed by a gateway and includes detecting a first message sent by a source module on a first data link. Fig. 6, step 610 and Specification at p. 16, l. 28 - p. 17, l. 3; and ll. 13-16. The first message is directed to a destination module and includes an address identifier corresponding to the destination module. Specification at p. 17, ll. 2-12. The method also includes retrieving the first

message and extracting the destination address identifier from the message. Fig. 6, step 630; and Specification at p. 17, ll. 19-21 and p. 18, ll. 7-18. The method further includes routing, based on the destination address and an address map including proxy logic identifiers, the first message to a proxy logic element in the gateway that performs functions associated with the destination module based on data included in the first message. Fig. 6, steps 640-650; and Specification at p. 18, ll. 2-6 and ll. 18-20.

Independent claim 8 is directed to a method for providing proxy services in a network of modules included in a machine environment. Specification at p. 29, ll. 2-3. The method is performed by a gateway and includes monitoring a first data link for messages, wherein the messages are transmitted by source nodes and intended for destination modules. Fig. 6, step 610; and Specification at p. 16, l. 28 - p. 17, l. 3 and ll. 13-16. The method also includes determining whether a first message intended for a first destination module should be intercepted from the first data link based on a destination address included in the first message. Fig. 6, steps 620-645; and Specification at p. 17, ll. 19-21 and p. 18, ll. 7-20. The method further includes intercepting the first message when the gateway determines that the message should be intercepted and routing, based on information in an address map, the first message to a proxy logic element in the gateway that performs functions associated with the first destination module based on data included in the first message. Fig. 6, step 650; and Specification at p. 18, ll. 2-26 and ll. 18-20.

Independent claim 10 is directed to a proxy control module in a machine. Fig. 4, 420 and 405. The proxy module includes means for monitoring a first data link connected to a plurality of modules, each module configured to direct messages to

destination modules by adding to the messages an address identifier corresponding to the destination modules. Fig. 3, 300; Fig. 4, 422 and 414-416; and Specification at p. 13, l. 19 - p. 15, l. 5. The proxy module also includes means for intercepting at least one of the messages based on a determination that the at least one message is intended for a destination module for which the gateway serves as a proxy. Fig. 3, 300; Fig. 5, 510; and Specification at p. 14, ll. 6-17. The proxy module further includes means for selectively providing, using an address map, the at least one message to program logic in the proxy control module that performs, based on data included in the at least one message, machine control functions similar to the destination module that may be connected to the first data link to perform the same functions. Fig. 5, 510, 530-554; and Specification at p. 14, l. 6 - p. 16, l. 26; and p. 15, l. 27 - p. 18, l. 28.

The “means for monitoring a first data link connected to a plurality of modules ” the “means for intercepting at least one of the messages,” and the “means for selectively providing” of claim 10 are means-plus-function limitations that must be construed according to 35 U.S.C. § 112, ¶ 6. See, e.g., M.P.E.P. §§ 2181-2186. 35 U.S.C. § 112, ¶ 6 requires that the claimed limitation be construed as limited to the specific structure disclosed in the specification to provide the claimed function and the equivalents of that structure.

The disclosed structure in Appellant’s specification that achieves the claimed function of “monitoring a first data link connected to a plurality of modules” may be, for example, the digital core 202 (including processors 205 and memories 210 and 215) of gateway 102, 420 of Figs. 1, 4, and 5 executing hardware, software, and/or firmware architecture 300 of Fig. 3. See, e.g., Specification at p. 10, l. 3 - p. 12, l. 25.

The disclosed structure in Appellant's specification that achieves the claimed function of "intercepting at least one of the messages" may be, for example, the digital core 202 (including processors 205 and memories 210 and 215) of gateway 102, 420 of Figs. 1, 4, and 5 executing hardware, software, and/or firmware architecture 300 of Fig. 3. See, e.g., Specification at p. 10, l. 3 - p. 12, l. 25; p. 12, l. 27 - p. 14, l. 17; p. 22, ll. 4-9.

The disclosed structure in Appellant's specification that achieves the claimed function of "selectively providing" may be, for example, the digital core 202 (including processors 205 and memories 210 and 215) of gateway 102, 420 of Figs. 1, 4, and 5 executing hardware, software, and/or firmware architecture 300 of Fig. 3; and mapping structure 510 and proxy logic elements 530, 540, and 550 of Fig. 5. See, e.g., Specification at p. 10, l. 3 - p. 12, l. 25; and p. 14, l. 18 - p. 18, l. 28.

Independent claim 11 is directed to a proxy control module in a machine. Fig. 4, 420 and 405. The proxy module includes means for monitoring a first data link connected to a plurality of modules, each module configured to direct messages to destination modules by adding to the messages an address identifier corresponding to the destination modules. Fig. 3, 300; Fig. 4, 422 and 414-416; and Specification at p. 13, l. 19 - p. 15, l. 5. The proxy module also includes means for determining whether the messages include respective address identifiers that correspond to address identifiers included in an address map. Fig. 3, 300; Fig. 5, 510; Specification at p. 14, ll. 6-17. The proxy module further includes means for intercepting at least one of the messages based on a determination that the at least one message includes an address identifier that corresponds to an address identifier in the address map and means for

selectively providing, using an address map, the at least one message to program logic in the proxy control module that performs, based on data included in the at least one message, machine control functions similar to the destination module that may be connected to the first data link to perform the same functions. Fig. 5, 510, 530-554; and Specification at p. 14, l. 6 - p 16, l. 26.

The “means for monitoring a first data link connected to a plurality of modules,” the “means for determining whether the messages include respective address identifiers that correspond to address identifiers included in an address map,” the “means for intercepting at least one of the messages,” and the “means for selectively providing” of claim 11 are means-plus-function limitations that must be construed according to 35 U.S.C. § 112, ¶ 6. See, e.g., M.P.E.P. §§ 2181-2186. 35 U.S.C. § 112, ¶ 6 requires that the claimed limitation be construed as limited to the specific structure disclosed in the specification to provide the claimed function and the equivalents of that structure.

The disclosed structure in Appellant’s specification that achieves the claimed function of “monitoring a first data link connected to a plurality of modules “ may be, for example, the digital core 202 (including processors 205 and memories 210 and 215) of gateway 102, 420 of Figs. 1, 4, and 5 executing hardware, software, and/or firmware architecture 300 of Fig. 3. See, e.g., Specification at p. 10, l. 3 - p. 12, l. 25.

The disclosed structure in Appellant’s specification that achieves the claimed function of “determining whether the messages include respective address identifiers that correspond to address identifiers included in an address map” may be, for example, the digital core 202 (including processors 205 and memories 210 and 215) of gateway 102, 420, etc. of Figs. 1, 4, and 5 executing hardware, software, and/or firmware

architecture 300 of Fig. 3. See, e.g., Specification at p. 10, l. 3 - p. 12, l. 25; p. 17, l. 13 - p. 18, l. 29; and p. 21, l. 7 - p. 22, l. 9.

The disclosed structure in Appellant's specification that achieves the claimed function of "means for intercepting at least one of the messages" may be, for example, the digital core 202 (including processors 205 and memories 210 and 215) of gateway 102, 420 of Figs. 1, 4, and 5 executing hardware, software, and/or firmware architecture 300 of Fig. 3. See, e.g., Specification at p. 10, l. 3 - p. 12, l. 25; p. 12, l. 27 - p. 14, l. 17; and p. 22, ll. 4-9.

The disclosed structure in Appellant's specification that achieves the claimed function of "selectively providing" may be, for example, the digital core 202 (including processors 205 and memories 210 and 215) of gateway 102, 420 of Figs. 1, 4, and 5 executing hardware, software, and/or firmware architecture 300 of Fig. 3; and mapping structure 510 and proxy logic elements 530, 540, and 550 of Fig. 5. See, e.g., Specification at p. 10, l. 3 - p. 12, l. 25; and p. 14, l. 18 - p. 18, l. 28.

Independent claim 12 is directed to a system for exchanging information in a machine environment having a network of modules. Fig. 4, 400. The system includes a source module for broadcasting a first message over a first data link that uses a first protocol. Fig. 4, 414-416 and 422; and Specification at p. 13, l. 19 - p. 15, l. 2. The first message is intended for a destination module and includes a destination address identifier associated with the destination module. Fig. 5, 511 and 512; Specification at p. 17, ll. 2-12. The system also includes a gateway coupled to the first data link. Figs. 4 and 5, 420. The gateway is configured to monitor the first data link for messages and intercept the first message from the first data link based on a determination that the

destination address corresponds to proxy logic included in the gateway. Specification at p. 17, l. 16 - p. 17, l. 20. The gateway is further configured to route the intercepted message, based on information in an address map, to the proxy logic, wherein the proxy logic performs functions associated with the destination module based on data included in the intercepted message. Fig. 5, 510, 530-550; and Specification at p. 15, l. 27 - p. 16, l. 26 and p. 17, l. 19 - p. 18, l. 6.

Independent claim 19 is directed to a system for exchanging information in a machine environment having a network of modules. Fig. 4, 400. The system includes a source module for broadcasting a first message over a first data link that uses a first protocol. Fig. 4, 414-416 and 422; and Specification at p. 13, l. 19 - p. 15, l. 2.. The first message is intended for a destination module and includes a destination address identifier associated with the destination module. Fig. 5, 511 and 512; Specification at p. 17, ll. 2-12. The system also includes a gateway coupled to the first data link. Figs. 4 and 5, 420. The gateway is configured to monitor the first data link for messages, retrieve the first message from the first data link, and extract the destination address identifier from the first message. Specification at p. 17, ll. 13-21. The gateway is further configured to search an address map for the destination address included in the first message, and when the destination address is found in the address map, route, based on information in the address map, the first message to a proxy logic element that performs functions associated with the destination module based on data included in the first message. Fig. 5, 530-550; and Specification at p. 17, l. 21 - p. 18, l. 20. Further, the proxy logic element is located in the gateway. Fig. 5, 530-550.

Independent claim 27 is directed to a system for exchanging information in a machine environment. Fig. 9, 900; and Specification at p. 22, ll. 15-17. The system includes a network of modules coupled to a first data link included in a machine. Fig. 9, 912-916, 922, and 905; and Specification at p. 22, ll. 20-22. The system also includes a master controller remotely located with respect to the machine, coupled to the machine via a wireless data link, and configured to control the modules. Fig. 9, 955; and Specification at p. 22, ll. 22 - p. 23, l. 4. The system further includes a gateway in the machine. Fig. 9, 920. The gateway is configured to monitor the first data link for messages sent by the modules and intended for the master controller. The gateway is further configured to intercept the messages from the first data link based on a determination that the messages are intended for the master controller. Specification at p. 23, ll. 5-26. The gateway is further configured to route the intercepted message, based on information in an address map, to proxy logic located in the gateway that performs functions associated with the master controller. Specification at p. 23, l. 27 - p. 24, l. 11.

Independent claim 28 is directed to a computer-readable medium including instructions for performing a method by a gateway in a machine environment. Fig. 1, 100, 120; Fig. 2, 202; Fig. 3, 300; and Specification at p. 9, l. 23 - p. 10, l. 13 and p. 11, l. 20 - p. 12, l. 25. The method includes monitoring a first data link for messages, wherein the messages are transmitted by source nodes and intended for destination modules. Fig. 6, step 610; and Specification at p. 16, l. 28 to p. 17, l. 3 and ll. 13-16. The method also includes determining whether a first message intended for a first destination module should be intercepted from the first data link based on a destination

address included in the first message. Fig. 6, steps 620-645; and Specification at p. 17, II. 19-21; and p. 18, II. 7-20. The method also includes intercepting the first message when the gateway determines that the message should be intercepted and routing, based on information in an address map, the first message to a proxy logic element in the gateway that performs functions associated with the first destination module based on data included in the first message. Fig. 6, step 650; and Specification at p. 18, II. 2-26 and II. 18-20

Independent claim 29 is directed to a computer-readable medium including instructions for performing a method performed by a gateway in machine environment. Fig. 1, 100, 120; Fig. 2, 202; Fig. 3, 300; and Specification at p. 9, I. 23 - p. 10, I. 13, and p. 11, I. 20 - p. 12, I. 25. The method includes monitoring a first data link connected to a plurality of modules, each module configured to direct messages to destination modules by adding to the messages an address identifier corresponding to the destination modules. Fig. 6, step 610; and Specification at p. 16, I. 28 - p. 17, I. 3 and II. 13-16. The method further includes intercepting at least one of the messages based on a determination that the at least one message is intended for a destination module for which the gateway serves as a proxy. Fig. 6, steps 620-645; and Specification at p. 17, II. 19-21 and p. 18, II. 7-20. The method further includes selectively providing, using an address map, the at least one message to program logic in the gateway that performs, based on data included in the at least one message, machine control functions similar to the destination module that may be connected to the first data link to perform the same functions. Fig. 6, step 650; and Specification at p. 18, II. 2-26 and II. 18-20.

Independent claim 30 is drawn to a system for processing messages in a machine environment. Fig. 7, 700. The system includes a first machine having a first gateway and a first destination module. Fig. 7, 715 and 710. The system also includes a second machine including a second gateway and a second destination module. Fig. 7, 720 and 721. The first gateway is configured to receive a first message having an identifier that identifies a destination module as a target for the first message.

Specification at p. 21, ll. 7-12. The first gateway is also configured to determine, based on the identifier, whether to process the first message with the first gateway or to route the first message from the first gateway. Specification at p. 21, ll. 12-19. Further, when the first gateway can process the first message, it performs functions similar to those of the first destination module using data included in the first message, and when the first gateway cannot process the first message, it routes the first message to the second gateway. Specification at p. 21, l. 19 - p. 22, l. 9 and p. 24, ll. 23-29.

Independent claim 32 is drawn to a method performed by a gateway for providing proxy services in a machine including modules interconnected by a data link and the gateway, the gateway including first program logic and second program logic serving as proxies for modules in the machine. Specification at p. 14, l. 18 - p. 15, l. 26. The method includes processing a message in the first program logic, wherein the message includes information identifying a destination module that is configured to perform an operation using data included in the message. Specification at p. 18, l. 2-22. The method also includes routing, based on an address map and the information included in the message, the message from the first program logic to the second program logic and

performing, by the second program logic, the operation on the data included in the message. Specification at p. 18, l. 22 - p. 29 and p. 24, l. 11-29

Independent claim 34 is directed to a gateway providing proxy services in a machine including modules interconnected by a data link. Fig. 5, 420. The gateway includes first program logic configured to perform functions associated with at least a first one of the modules and second program logic configured to perform functions associated with at least a second one of the modules. E.g., Fig. 5, 530 and 540; and Specification at p. 14, l. 18 - p. 15, l. 26. The first program logic program logic is also configured to process a message including information identifying a destination module that is configured to perform an operation using data included in the message. Specification at p. 18, l. 2-22. The first program logic is also configured to route, based on an address map and the information included in the message, the message from the first program logic to the second program logic, which is configured to perform the operation on the data included in the message. Specification, p. 18, l. 22 - p. 29, and p. 24, l. 11-29.

Independent claim 36 is directed to a method for processing messages in a machine environment. The method includes receiving, at a first gateway located in a first machine, a message addressed to a destination module located in a machine. Fig. 7, 710 and 715; and Specification at p. 21, ll. 7-12. The method further includes performing by the first gateway functions associated with the destination module, when the first gateway is able to process the message and routing the message from the first gateway to a second gateway located in a second machine, when the first gateway is

unable to process the message. Fig. 7, 720 and 725; and Specification at p. 21, l. 19 - p. 22, l. 9 and p. 24, ll. 23-29.

Independent claim 38 is directed to a method for providing proxy services in a network of modules included in a machine environment. The method is performed by a gateway and includes retrieving by the gateway a proxy logic element from a remote location. Specification at p. 15, ll. 17-26 and p. 24, ll. 7-11. The method also includes detecting a message sent by a source module on a first data link. Fig. 6, step 610 and Specification at p. 16, l. 28 to p. 17, l. 3 and ll. 13-16. Further, the message is directed to a destination module and includes an address identifier corresponding to the destination module. Specification at p. 17, ll. 2-12. The method also includes retrieving the first message and extracting the destination address identifier from the message and routing, based on the destination address identifier and an address map, the first message to a proxy logic element in the gateway that performs functions associated with the destination module. Fig. 6, steps 640-650; and Specification at p. 18, ll. 2-6 and ll. 18-20.

GROUND OF REJECTION

A. Claims 30 and 31 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

B. Claims 1-6, 8-25, 27-29, and 32-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,728,603 to Pruzan et al. ("Pruzan") in view of U.S. Patent No. 6,865,460 to Bray et al. ("Bray").

C. Claims 30, 31, 36, and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pruzan in view of U.S. Patent Application Publication No. 2006/0225740 to Klemba et al. ("Klemba").

D. Claim 38 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Pruzan and Bray, and further in view of U.S. Patent Application Publication No. 2003/0014521 to Elson et al. ("Elson").

ARGUMENT

The rejection of claims 30 and 31 under 35 U.S.C. § 112, first paragraph, should be reversed.

Appellant respectfully requests the Board reverse the § 112 rejection of claims 30 and 31. In the Final Office Action mailed February 6, 2007 ("Office Action"), the Examiner states that "there is no support for the first module being present and the first gateway intercepting the first message. The specification consistently discloses the invention as replacing the modules and it never discloses that the proxy logic and destination modules that the proxy logic represents are present at the same time." Office Action at 2. The Examiner's characterization of the specification is incorrect.

Although the disclosed proxy logic can replace a destination module, the replacement is not necessarily physical. The proxy logic may functionally replace a destination module by performing functions associated with the destination module even though the destination module is physically present. In other words, the replacement may be physical and/or functional. For example, the specification states:

In addition, referring back to FIG. 7, gateway 715 may transmit a message originating from (or received by) proxy logic included in gateway 715 over data link 722 for receipt by a destination module in work machine 720. Gateway 725 in work machine 720 may serve a proxy for the destination module and may therefore intercept the message and route it to corresponding proxy logic included in gateway 725. Such intercepting and routing may be transparent to the message source and destination.

Specification ¶¶ 0059 - 0060. In other words, the proxy logic of gateway 725, which is in work machine 720, may serve as proxy for a destination module in the same work machine 720. As such, contrary to the Examiner's assertion, the specification provides for the proxy logic and the destination module for which the proxy logic serves as proxy to be "present at the same time" and/or in the same work machine.

For at least these reasons, there is ample support in the specification for the subject matter of claims 30 and 31. Appellant respectfully requests that the Board reverse the rejection of claims 30 and 31 under 35 U.S.C. § 112, first paragraph.

The rejection of claims 1-6, 8-25, 27-29, and 32-35 under 35 U.S.C. § 103(a) as being unpatentable Pruzan in view of Bray should be reversed.

Appellant respectfully requests that the Board reverse the Examiner's rejection of claims 1-6, 8-25, 27-29, and 32-35 under 35 U.S.C. § 103(a), because a *prima facie* case of obviousness has not been established with respect to these claims.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2142, 8th Ed., Rev. 5 (August 2006).

A *prima facie* case of obviousness has not been established because, among other things, Pruzan and Bray, either taken alone or in any reasonable combination, do not teach or suggest each and every element of Appellant's claims.

Independent claims 1, 8, 10-12, 19, and 27-29.

Independent claim 1 recites a method for providing proxy services comprising, among other things, ". . . routing, based on the destination address and an address map including proxy logic identifiers, the first message to a proxy logic element in the gateway that performs functions associated with the destination module based on data included in the first message."

Neither Pruzan nor Bray disclose the claimed routing feature. Pruzan discloses a system 10 for managing wireless vehicular communications. Pruzan at col. 3, ll. 29-30; and Fig. 1. The system includes a protocol converter 30 and a variety of controllers 22

in communication via a vehicle bus 24. Pruzan at col. 3, ll. 30-42; and Fig. 1. In addition, a remote diagnostic system 40 is coupled to protocol converter 30 via a wireless link 32 and in communication with controllers 22. Pruzan at col. 3, ll. 42-45; and Fig. 1. The protocol converter 30 receives messages from bus 24 and/or diagnostic system 40 (i.e., for bus 24) and determines whether to convey the message based on the content of the message and/or other criteria (e.g., a destination address). Pruzan at col. 4, l. 6-39; col. 12, l. 67 - col. 13, l. 7; col. 13, ll. 29-41; and Fig. 4, steps 320, 340, and 344. If the message should not be conveyed, protocol converter 30 filters the message (i.e., does not convey the message). Pruzan at col. 4, l. 6-39; col. 13, ll. 22-27 and ll. 39-42. If the message should be conveyed, however, protocol converter 30 converts the message into a form (i.e., protocol conversion) appropriate for the intended destination of the message, such as diagnostic system 40 or one of controllers 22. Pruzan at col. 6, ll. 48-56; col. 6, l. 65 - col. 7, l. 1; col. 7, l. 52 - col. 8, l. 1; and Fig. 4, steps 322 and 324. In particular, protocol converter 30 selects and sends the message to an appropriate protocol transceiver 60, which converts the message into a format appropriate for vehicle bus 24. Pruzan at col. 7, l. 66 - col. 8, l. 5; col. 13, ll. 16-18 and ll. 42-45; and Fig. 4, steps 328 and 348. Protocol converter 30 subsequently inserts the converted message onto bus 24 or sends the converter message to communication device 80 for transmission to diagnostic system 40, depending on whether the message was for bus 24 or from bus 24, respectively. Pruzan at col. 12, ll. 2-3; col. 12, ll. 18-19; col. 7, ll. 6-10; and Fig. 4, steps 332.

The Examiner asserts that Pruzan discloses routing based on an address map. Office Action at 4 and 8. Specifically, the Examiner asserts that "Pruzan repeatedly

discloses analyzing messages to determine their destination addresses in order to decide where to send the messages.” Office action at 8. As discussed above, however, when a message is destined for bus 24, the protocol converter 30 sends the message to an appropriate protocol transceiver 60. The protocol transceiver 60 converts the message into a format appropriate for the bus, and the converted message is then inserted onto bus 24. Pruzan does not disclose how the message gets from bus 24 to the destination controller 20. Pruzan does not require the message to be *routed* to the destination controller 20. For example, the destination controller 20 could filter, extract, or otherwise select the message from among a plurality of messages present on bus 24 based on the destination address of the message.

Likewise, when a message is destined for diagnostic system 40, it is transmitted by a wireless communication device 80. Pruzan at col. 6, l. 32-35. Pruzan describes the transmission to include modulating a carrier signal based on the message (e.g., frequency modulation, amplitude modulation, etc.). Pruzan at col. 7, ll. 16-26. In other words, the messages are communicated to diagnostic system 40 in the same manner that a radio station communicates a signal to a radio receiver. It cannot be said that this type of communication constitutes *routing*, as recited in claim 1. In other words, a radio station does not *route* the signal to a listener’s radio. Rather, the listener’s radio tunes in the signal.

In addition, even if Pruzan did disclose the routing of messages generally, and that the means by which protocol converter 30 examines the destination addresses of the messages is considered a map, which Appellant does not concede, Pruzan does not disclose *routing* a message based on an address map *including proxy logic*

identifiers to an element in the gateway that performs functions associated with the destination module based on data included in the message.

The Examiner alleges that Pruzan discloses this claimed subject matter at col. 9, ll. 10-23, where Pruzan discusses an emulation feature of protocol converter 30. Specifically, Pruzan teaches that a computer 70 may emulate functions of a node on a bus 24, such as performing address configurations, responding to state of health inquiries, implementing filtering requirements, and generating messages to defend an address on bus 24. Pruzan at col. 9, ll.10-11.

The ability of protocol converter 30 to emulate functions of a node on bus 24, however, is distinct from *routing a message to an element in the gateway that performs functions associated with destination module based on an address map containing proxy logic identifiers*, as required by claim 1. Pruzan merely discloses that computer 70 can emulate certain functions of a node on bus 24, nothing more. Pruzan, col. 9, ll. 10-22. Pruzan does not teach that the emulation involves routing the message to a specific element in the gateway that performs functions associated with the destination module. As discussed above, even if Pruzan did disclose the routing of messages generally (i.e., if the communications discussed in Pruzan constituted routing), which Appellant denies, the routing would only involve the communication of messages between controllers 22, protocol converter 30, and diagnostic system 40. Pruzan does not disclose routing the messages within the context of the emulation. Pruzan, col. 9, ll. 10-22. Nor does Pruzan disclose proxy logic identifiers on which the routing is based. In contrast, Pruzan teaches that a message is examined based on criteria such as an originating address, a destination address, a protocol of the message, a priority of the

message, and the content of the message. Pruzan at col. 4, ll. 17-20; and col. 13, ll. 34-37. None of these criteria constitute proxy logic identifiers, as required by claim 1. That is, none of the information contained in the messages of Pruzan is used by protocol converter 30 to identify a particular logic element that serves as proxy for the destination module to which the message was addressed. The Examiner therefore makes an unsupported assumption about the functionality of the emulation feature that is not taught by Pruzan.

Bray discloses a system 10 for controlling a plurality of electronic devices in an automobile. Bray at col. 3, ll. 24-25. Specifically, system 10 includes a plurality of interface modules 28 each configured to interface with a control processor 14 via a controller area network (CAN) bus 16 to provide a standard interface between control processor 14 and attached equipment. Bray at col. 4, ll. 14-37; and col. 5, l. 8-28. Bray, however, fails to remedy the deficiencies of Pruzan discussed above. Specifically, Bray fails to disclose the routing feature as recited in claim 1. Thus, Pruzan and Bray, even if combinable as argued by the Examiner, do not disclose each and every element recited in claim 1. For at least these reasons, Appellant respectfully requests that the Board reverse the rejection of claim 1 under § 103(a).

Claims 2-6 depend from independent claim 1 and therefore distinguish from Pruzan and Bray for at least the same reasons as claim 1. Further, dependent claims 2-6 may each recite unique combinations not disclosed by the prior art. Appellant respectfully requests that the Board reverse the rejection of claims 2-6 under § 103(a).

Independent claims 8, 10-12, 19, and 27-29, although of different scope than claim 1, distinguish from Pruzan and Bray for at least the same reasons as claim 1.

Appellant therefore respectfully requests that the Board reverse the rejection of claims 8, 10-12, 19, and 27-29 under § 103(a).

Dependent claims 9, 13-18, and 20-25 depend from claims 8, 10-12, and 19 therefore distinguish from Pruzan and Bray for at least the same reasons as claim 1. Further, dependent claims 9, 13-18, and 20-25 may each recite unique combinations not disclosed by the prior art. Appellant respectfully requests that the Board reverse the rejection of claims 9, 13-18, and 20-25 under § 103(a).

Independent claims 32 and 34.

Independent claim 32, although of different scope than claim 1, distinguishes from Pruzan and Bray for at least the same reasons as claim 1. For example, claim 32 recites a method for providing proxy services in a machine including modules interconnected by a data link and a gateway, the gateway including first program logic and second program logic serving as proxies for modules in the machine, the method comprising, among other things, “routing, based on an address map and the information included in the message, the message from the first program logic to the second program logic; and performing, by the second program logic, the operation on the data included in the message.”

Claim 32 also distinguishes from Pruzan and Bray for additional reasons. For instance, independent claims 32 recites “[a] gateway including first program logic and second program logic serving as proxies for modules in the work machine ... routing, based on an address map and the information included in the message, the message *from the first program logic to the second program logic; and performing, by the second program logic, the operation on the data included in the message.*”

The Examiner concludes that because Pruzan teaches that controllers 22 can exchange information, computer 70 (performs the emulation), would somehow "[route], based on an address map and the information included in the message, the message from the first program logic to the second program logic," and the second logic would "[perform] the operation on the data included in the message" during emulation. The Examiner justifies this assertion by stating that "this communication would have to continue even if two controllers were being emulated." Office Action at 9. This is not a Pruzan teaching, but rather an unsupported assumption about the functionality of the emulation feature. As discussed above in connection with claim 1, Pruzan does not disclose such routing with respect to even a single logic element. In fact, Pruzan does not teach that emulation involves routing of any kind.

For these reasons, Pruzan and Bray do not disclose each and every element of claim 32. Appellant respectfully requests that the Board reverse the rejection of claim 32 under § 103(a).

Claim 33 depends from independent claim 32 and therefore distinguishes from Pruzan and Bray for at least the same reasons as claim 32. Appellant respectfully requests that the Board reverse the rejection of claim 33 under § 103(a).

Independent claim 34, although of slightly different scope from claim 32, distinguishes from Pruzan and Bray for the same reasons as claim 32. Appellant respectfully requests that the Board reverse the rejection of claim 34 under § 103(a).

The rejection of claims 30, 31, 36, and 37 under 35 U.S.C. § 103(a) as being unpatentable over Pruzan in view Klemba et al. (“Klemba”) should be reversed.

Appellant respectfully requests that the Board reverse the Examiner’s rejection of claims 30, 31, 36, and 37 under 35 U.S.C. § 103(a). Pruzan and Klemba, either taken alone or in any reasonable combination, do not teach or suggest each and every claimed element.

Independent claims 30 and 36.

Independent claim 30 recites a system for processing messages in a work machine environment, comprising, among other things:

a first work machine including a first gateway and a first destination module; and

a second work machine including a second gateway and a second destination module,

wherein the first gateway is configured to . . .

determine, based on the identifier, whether to process the first message with the first gateway or to route the first message from the first gateway wherein when the first gateway can process the first message, it performs functions similar to those of the first destination module using data included in the first message, and when the first gateway cannot process the first message, it routes the first message to the second gateway.

The Examiner admits that Pruzan does not disclose “routing the message from a first gateway in a first machine to a second gateway in a second machine when the first gateway is unable to process the message” and that “the second gateway [routes] the message from the second gateway when the second gateway is unable to process the message.” Office Action at 7. Klemba also fails to disclose these features.

Klemba discloses a method of routing a message from an entry service point (SP) to a terminal service point (SP) in an ad-hoc network based on an entry SP internal IP address, an entry SP ID, a terminal SP internal IP address, and a terminal SP ID contained in the message header. Klemba at ¶¶ 0038, 0040-0041. However, Klemba does not teach that the first SP, or any intermediate SP in the ad-hoc network, makes determinations as to whether it is *unable (or able) to process the message*. In fact, Klemba is directed to an algorithm to efficiently route the message from the entry SP to the terminal SP along a concise and direct path through the network. Klemba, ¶¶ 0053-0055. Klemba states that “in order for the SPN to efficiently route traffic ... from Entry SP 605 to a Terminal SP 630, it fundamentally needs to know that the destination exists and how to get to it.” Klemba, ¶ 0053. In other words, the SPs of Klemba simply route messages, based on the addresses and IDs contained in the message headers, *without determining whether each SP along the path is unable to process the message*. The ability or inability of the SPs to process a message is not a criterion considered by the routing algorithm.

Pruzan and Klemba, even if combinable as argued by the Examiner, thus do not disclose each and every element recited in independent claim 30. For at least these reasons, Appellant respectfully requests that the Board reverse the § 103(a) rejection of claim 30 and its respective dependent claim 31.

Independent claim 36, although of different scope than claim 30, distinguishes from Pruzan and Klemba for at least the same reasons as claim 36. Appellant therefore respectfully requests that the Board reverse the § 103(a) of claim 36 and its respective dependent claim 37.

The rejection of claim 38 under 35 U.S.C. § 103(a) as being unpatentable over Pruzan and Bray, and further in view of Elson should be withdrawn.

Appellant respectfully requests that the Board reverse the Examiner's rejection of claim 38 under U.S.C. § 103(a). Pruzan, Bray, and Elson, either taken alone or in any reasonable combination, do not teach or suggest each and every claimed element.

Independent claim 38 recites a method for providing proxy services in a network of modules included in a work machine environment, comprising, among other things “ . . . routing, based on the destination address identifier and an address map, the first message to a proxy logic element in the gateway that performs functions associated with the destination module.”

As discussed above in connection with claim 1, Pruzan and Bray fail to disclose the claimed routing step. Elson also fails to disclose the claimed routing step, and the Examiner not rely on Elson as disclosing the routing step recited in claim 38. Elson discloses an open platform architecture for managing resources in a vehicle telematics system. Elson at ¶ 0075. In particular, the system manages requests by outside applications for access to physical resources on the vehicle. Id. Elson, however, fails to disclose the routing step as recited in claim 38.

Pruzan, Bray, and Elson, even if combinable as argued by the Examiner, thus do not disclose each and every element recited in claim 38. For at least these reasons, Appellant respectfully requests that the Board reverse the rejection of claim 38 under § 103(a).

Conclusion

For the reasons given above, pending claims 1-6, 8-25, and 27-38 are allowable and reversal of the Examiner's rejection is respectfully requested.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to Deposit Account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: January 29, 2008

By: 

Philip J. Hoffmann
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Claims Appendix to Appeal Brief Under Rule 41.37(c)(1)(viii)

1. A method for providing proxy services in a network of modules included in a work machine environment, the method performed by a gateway and comprising:

detecting a first message sent by a source module on a first data link, wherein the first message is directed to a destination module and includes an address identifier corresponding to the destination module;

retrieving the first message and extracting the destination address identifier from the message; and

routing, based on the destination address and an address map including proxy logic identifiers, the first message to a proxy logic element in the gateway that performs functions associated with the destination module based on data included in the first message.

2. The method of claim 1, wherein detecting a first message on a first data link comprises detecting a first message sent by a source module on a proprietary data link.

3. The method of claim 1, further comprising:
providing the first message from the proxy logic element to a second module over a second data link interfaced by the proxy logic element.

4. The method of claim 3, further comprising:

receiving a second message responsive to the first message from the second module via the second data link; and

routing the second message to the destination module over the first data link via the address map.

5. The method of claim 4, further comprising:
detecting that the first data link is incompatible with the second data link; and
translating the second message into a comparable message consistent with the first data link.

6. The method of claim 1, further comprising:
generating, by the proxy logic element, a second message that is responsive to the first message and routing the second message to the source module via the first data link.

7. (Cancelled)

8. A method for providing proxy services in a network of modules included in a work machine environment, the method performed by a gateway and comprising:

monitoring a first data link for messages, wherein the messages are transmitted by source nodes and intended for destination modules;

determining whether a first message intended for a first destination module should be intercepted from the first data link based on a destination address included in the first message;

intercepting the first message when the gateway determines that the message should be intercepted; and

routing, based on information in an address map, the first message to a proxy logic element in the gateway that performs functions associated with the first destination module based on data included in the first message.

9. The method of claim 8, wherein the source nodes include at least one of either an on-board module and an off-board system.

10. A proxy control module in a work machine, the proxy module comprising:
means for monitoring a first data link connected to a plurality of modules, each module configured to direct messages to destination modules by adding to the messages an address identifier corresponding to the destination modules;

means for intercepting at least one of the messages based on a determination that the at least one message is intended for a destination module for which the gateway serves as a proxy; and

means for selectively providing, using an address map, the at least one message to program logic in the proxy control module that performs, based on data included in the at least one message, work machine control functions similar to the destination module that may be connected to the first data link to perform the same functions.

11. A proxy control module in a work machine, the proxy module comprising:
means for monitoring a first data link connected to a plurality of modules, each module configured to direct messages to destination modules by adding to the messages an address identifier corresponding to the destination modules;

means for determining whether the messages include respective address identifiers that correspond to address identifiers included in an address map;

means for intercepting at least one of the messages based on a determination that the at least one message includes an address identifier that corresponds to an address identifier in the address map; and

means for selectively providing, using an address map, the at least one message to program logic in the proxy control module that performs, based on data included in the at least one message, work machine control functions similar to the destination module that may be connected to the first data link to perform the same functions.

12. A system for exchanging information in a work machine environment having a network of modules, the system comprising:

a source module for broadcasting a first message over a first data link that uses a first protocol, wherein the first message is intended for a destination module and includes a destination address identifier associated with the destination module; and

a gateway coupled to the first data link and configured to:

monitor the first data link for messages,

intercept the first message from the first data link based on a determination that the destination address corresponds to proxy logic included in the gateway, and

route the intercepted message, based on information in an address map, to the proxy logic, wherein the proxy logic performs functions associated with the destination module based on data included in the intercepted message.

13. The system of claim 12, wherein the first data link is a proprietary data link.

14. The system of claim 12, further comprising a second data link that interfaces the proxy logic element.

15. The system of claim 14, wherein the gateway is further configured to transmit information responsive to the first message from the proxy logic element over the second data link.

16. The system of claim 14, wherein the gateway is further configured to receive a second message from the second data link and route, using the address map, the second message over the first data link to the source module.

17. The system of claim 16, wherein the second data link is a non-proprietary standard data link including one of 31939, CAN, MODBUS, serial standard data link, and the Ethernet.

18. The system of claim 17, wherein the gateway is further configured to translate the second message into a comparable message consistent with the first data link.

19. A system for exchanging information in a work machine environment having a network of modules, the system comprising:

a source module for broadcasting a first message over a first data link that uses a first protocol, wherein the first message is intended for a destination module and includes a destination address identifier associated with the destination module; and

a gateway coupled to the first data link and configured to:

monitor the first data link for messages,

retrieve the first message from the first data link,

extract the destination address identifier from the first message,

search an address map for the destination address included in the first message, and when the destination address is found in the address map, route,

based on information in the address map, the first message to a proxy logic element that performs functions associated with the destination module based on data included in the first message, wherein the proxy logic element is located in the gateway.

20. (Original) The system of claim 19, wherein the first data link is a proprietary data link.

21. The system of claim 19, further comprising a second data link that interfaces the proxy logic element.

22. The system of claim 21, wherein the gateway is further configured to transmit information responsive to the first message from the proxy logic element over the second data link.

23. The system of claim 21, wherein the gateway is further configured to receive a second message from the second data link and route, using the address map, the second message over the first data link to the source module.

24. The system of claim 23, wherein the second data link is a non-proprietary standard data link including one of J1939, CAN, MODBUS, serial standard data link, and the Ethernet.

25. The system of claim 24, wherein the gateway is further configured to translate the second message into a comparable message consistent with the first data link.

26. (Cancelled)

27. A system for exchanging information in a work machine environment, the system comprising:

a network of modules coupled to a first data link included in a work machine;
a master controller remotely located with respect to the work machine and coupled to the work machine via a wireless data link, wherein the master controller is configured to control the modules; and

a gateway included in the work machine and configured to:
monitor the first data link for messages, wherein the messages are sent by the modules and intended for the master controller,
intercept the messages from the first data link based on a determination that the messages are intended for the master controller, and
route the intercepted message, based on information in an address map, to proxy logic located in the gateway that performs functions associated with the master controller.

28. A computer-readable medium including instructions for performing a method in a work machine environment, the method performed by a gateway and comprising:

monitoring a first data link for messages, wherein the messages are transmitted by source nodes and intended for destination modules;
determining whether a first message intended for a first destination module should be intercepted from the first data link based on a destination address included in the first message;
intercepting the first message when the gateway determines that the message should be intercepted; and

routing, based on information in an address map, the first message to a proxy logic element in the gateway that performs functions associated with the first destination module based on data included in the first message.

29. A computer-readable medium including instructions for performing a method in a work machine environment, the method performed by a gateway and comprising:

monitoring a first data link connected to a plurality of modules, each module configured to direct messages to destination modules by adding to the messages an address identifier corresponding to the destination modules;

intercepting at least one of the messages based on a determination that the at least one message is intended for a destination module for which the gateway serves as a proxy; and

selectively providing, using an address map, the at least one message to program logic in the gateway that performs, based on data included in the at least one message, work machine control functions similar to the destination module that may be connected to the first data link to perform the same functions.

30. A system for processing messages in a work machine environment, comprising:

a first work machine including a first gateway and a first destination module; and
a second work machine including a second gateway and a second destination module,

wherein the first gateway is configured to:

receive a first message having an identifier that identifies a

destination module as a target for the first message, and

determine, based on the identifier, whether to process the first message with the first gateway or to route the first message from the first gateway, wherein:

when the first gateway can process the first message, it performs functions similar to those of the first destination module using data included in the first message, and

when the first gateway cannot process the first message, it routes the first message to the second gateway.

31. The system of claim 30, wherein the second gateway is configured to: determine, based on the identifier, whether to process the first message within the second gateway or to route the first message from the second gateway, wherein:

when the second gateway can process the first message, it performs functions similar to those of the second destination module using data included in the first message, and

when the second gateway cannot process the first message, it routes the first message from the second gateway.

32. A method for providing proxy services in a work machine including modules interconnected by a data link and a gateway, the gateway including first program logic and second program logic serving as proxies for modules in the work machine, the method performed by the gateway comprising:

processing a message in the first program logic, wherein the message includes information identifying a destination module that is configured to perform an operation using data included in the message;

routing, based on an address map and the information included in the message, the message from the first program logic to the second program logic; and

performing, by the second program logic, the operation on the data included in the message.

33. The method of claim 32, wherein processing the message in the first program logic includes at least one of:

generating the message by the first program logic; and

receiving by the first program logic the message from a source module.

34. A gateway providing proxy services in a work machine including modules interconnected by a data link, the gateway comprising:

first program logic configured to perform functions associated with at least a first one of the modules; and

second program logic configured to perform functions associated with at least a second one of the modules;

wherein the first program logic is configured to:

process a message, wherein the message includes information identifying a destination module that is configured to perform an operation using data included in the message, and

route, based on an address map and the information included in the message, the message from the first program logic to the second program logic, and

wherein the second program logic is configured to perform the operation on the data included in the message.

35. The system of claim 34, wherein the first program logic is configured to at least one of:

generate the message; and

receive the message from a source module.

36. A method for processing messages in a work machine environment, comprising:

receiving, at a first gateway located in a first work machine, a message addressed to a destination module located in a work machine;

performing by the first gateway functions associated with the destination module, when the first gateway is able to process the message; and

routing the message from the first gateway to a second gateway located in a second work machine, when the first gateway is unable to process the message.

37. The method of claim 36, further comprising:

receiving at the second gateway the message from the first gateway, if the first gateway routes the message to the second gateway;

performing by the second gateway functions associated with the destination module, when the second gateway is able to process the message; and

routing the message from the second gateway, when the second gateway is unable to process the message.

38. A method for providing proxy services in a network of modules included in a work machine environment, the method performed by a gateway and comprising:

retrieving by the gateway a proxy logic element from a remote location;

detecting a message sent by a source module on a first data link, wherein the message is directed to a destination module and includes an address identifier corresponding to the destination module;

retrieving the first message and extracting the destination address identifier from the message; and

routing, based on the destination address identifier and an address map, the first message to a proxy logic element in the gateway that performs functions associated with the destination module.

Evidence Appendix to Appeal Brief Under Rule 41.37(c)(1)(ix)

Appellant does not rely on any evidence in this Appeal.

Related Proceedings Appendix to Appeal Brief Under Rule 41.37(c)(1)(x)

To Appellant's knowledge, there are no related proceeding decisions.